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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/702,368	11/06/2003	William F. DiVergilio	02-IMP-068	8501

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ESCHWEILER & ASSOCIATES, LLC  
NATIONAL CITY BANK BUILDING  
629 EUCLID AVE., SUITE 1000  
CLEVELAND, OH 44114

EXAMINER
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ZERVIGON, RUDY

ART UNIT	PAPER NUMBER
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1763

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	03/12/2007	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

**Office Action Summary**

Application No.

10/702,368

Applicant(s)

DIVERGILIO ET AL.

Examiner

Rudy Zervigon

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**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --****Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 04 December 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 13-29 is/are pending in the application.
- 4a) Of the above claim(s) 26-29 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 13-25 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on 06 November 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |                                                                                      |                                                                   |
|--------------------------------------------------------------------------------------|-------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____                                                          | 6) <input type="checkbox"/> Other: _____                          |

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### **DETAILED ACTION**

1. In view of the Appeal Brief filed on December 4, 2006, PROSECUTION IS HEREBY REOPENED. New grounds of rejection are set forth below.

To avoid abandonment of the application, appellant must exercise one of the following two options:

(1) file a reply under 37 CFR 1.111 (if this Office action is non-final) or a reply under 37 CFR 1.113 (if this Office action is final); or,

(2) initiate a new appeal by filing a notice of appeal under 37 CFR 41.31 followed by an appeal brief under 37 CFR 41.37. The previously paid notice of appeal fee and appeal brief fee can be applied to the new appeal. If, however, the appeal fees set forth in 37 CFR 41.20 have been increased since they were previously paid, then appellant must pay the difference between the increased fees and the amount previously paid.

A Supervisory Patent Examiner (SPE) has approved of reopening prosecution by signing below:

  
**PARVIZ HASSANZADEH**  
**SUPERVISORY PATENT EXAMINER**

### ***Election/Restrictions***

2. This application contains claims 26-29 drawn to an invention nonelected with traverse in Paper No. December 14, 2005. A complete reply to the final rejection must include cancellation of nonelected claims or other appropriate action (37 CFR 1.144) See MPEP § 821.01.

***Drawings***

3. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the “push-pull oscillator circuit” must be shown or the feature canceled from the claim. No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as “amended.” If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either “Replacement Sheet” or “New Sheet” pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

***Claim Rejections - 35 USC § 112***

4. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

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5. Claim 19 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claims contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. Applicant's claimed "push-pull" oscillator circuit is nowhere described in the as-filed specification.

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. Claims 18-25 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

8. Claims 18-25 recite the limitation "ion shower". There is insufficient antecedent basis for this limitation in the claim.

***Claim Rejections - 35 USC § 103***

9. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

10. Claims 13-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Weiler; Manfred et al. (WO 200163981 A)<sup>1</sup> in view of Moslehi; Mehrdad M. (US 5846883 A). Weiler teaches an ion shower system (Figur 1, Abstract), comprising: a plasma (Abstract) source (1-6; Figur 1, Abstract) operable to generate source gas ions within a chamber (7; Figur 1, Abstract), wherein the plasma (Abstract) source (1-6; Figur 1, Abstract) further comprises: a plurality of

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<sup>1</sup> The Examiner has requested a translation of WO 200163981 A from the translations branch. While the request is being honored, USPat. 6,936,144 (citing WO 200163981 A as priority) is used as an aid in interpreting identically numbered elements.

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conductor segments (3; Figur 1, 2, 4; Abstract); an antenna drive circuit (8,2,9; Figur 1; Abstract) coupled to the plurality of conductor segments (3; Figur 1, 2, 4; Abstract), and operable to provide power to the conductor segments (3; Figur 1, 2, 4; Abstract); and a source gas inlet (6; Figur 1; Abstract), wherein the source gas inlet (6; Figur 1; Abstract) is operable to provide a source gas to the chamber (7; Figur 1, Abstract), and wherein the conductor segments (3; Figur 1, 2, 4; Abstract), antenna drive circuit (8,2,9; Figur 1; Abstract) cooperatively provide energy to charged particles in the chamber (7; Figur 1, Abstract), thereby energizing the charged particles and generating a plasma (Abstract) comprising source gas ions and electrons within the chamber (7; Figur 1, Abstract) to ionizing collisions between the energized charged particles and the source gas; an extraction assembly (5; Figur 1; Abstract) associated with the chamber (7; Figur 1, Abstract) and operable to extract source gas ions therefrom.

Weiler further teaches:

- i. The ion shower of claim 13, wherein first and last conductor segments (3; Figur 1, 2, 4; Abstract) of the plurality of conductor segments (3; Figur 1, 2, 4; Abstract) form an input, and wherein the antenna drive circuit (8,2,9; Figur 1; Abstract) is coupled to the input, as claimed by claim 15
- ii. The ion shower (Figur 1, Abstract) of claim 13, wherein the antenna drive circuit (8,2,9; Figur 1; Abstract) comprises an oscillator circuit (8,2,9; Figur 1; Abstract), as claimed by claim 18
- iii. The ion shower (Figur 1, Abstract) of claim 18, wherein the oscillator circuit (8,2,9; Figur 1; Abstract) comprises a push-pull oscillator circuit (8,2,9; Figur 1; Abstract), as claimed by claim 19

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- iv. The ion shower (Figur 1, Abstract) of claim 13, wherein the plurality of conductor segments (3; Figur 1, 2, 4; Abstract) are arranged within the chamber (7; Figur 1, Abstract) in an azimuthally symmetric fashion, wherein a non-uniform capacitive electrostatic field component along each conductor segment is repeated in an azimuthally symmetric fashion – claim 20
- v. The ion shower (Figur 1, Abstract) of claim 13, wherein the extraction assembly (5; Figur 1; Abstract) is associated with a top portion of the chamber (7; Figur 1, Abstract), and is operable to extract ions vertically from the top portion thereof, as claimed by claim 21
- vi. The ion shower (Figur 1, Abstract) of claim 13, wherein the chamber (7; Figur 1, Abstract) further comprises a bottom portion and side portions, and wherein the side portions comprise a plurality of multi-cusp magnet devices (4; Figur 1, Abstract) operable to produce multi-cusp magnetic fields thereat to facilitate an azimuthal uniformity of plasma (Abstract) within the chamber (7; Figur 1, Abstract), as claimed by claim 23
- vii. The ion shower (Figur 1, Abstract) of claim 23, wherein the multi-cusp magnet devices (4; Figur 1, Abstract) comprise electromagnets (4; Figur 1, Abstract)<sup>1</sup> operable to provide a variation in multi-cusp magnetic field strength at differing positions along the side portions, as claimed by claim 24
- viii. The ion shower (Figur 1, Abstract) of claim 24, wherein the electromagnets are independently controllable, thereby facilitating a tuning of the multi-cusp magnetic fields, as claimed by claim 25

Weiler does not teach:

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- i. a plurality of capacitors, wherein the conductor segments (3; Figur 1, 2, 4; Abstract) are serially connected through the plurality of capacitors, wherein the series arrangement of conductor segments (3; Figur 1, 2, 4; Abstract) and capacitors reside within the chamber (7; Figur 1, Abstract) – claim 13
- ii. The ion shower of claim 13, further comprising a workpiece support structure associated with the chamber (7; Figur 1, Abstract), and operable to secure the workpiece for implantation thereof of source gas ions from the extraction assembly (5; Figur 1; Abstract), as claimed by claim 14
- iii. The ion shower of claim 13, wherein the conductor segments (3; Figur 1, 2, 4; Abstract) have an inductive reactance associated therewith, and wherein the capacitors have a capacitive reactance associated therewith, and wherein one of the conductors and one of the capacitors form an antenna segment, wherein the inductive reactance and capacitive reactance of the antenna segment are equal at the predetermined frequency, as claimed by claim 16. Applicant's claim requirements of "the conductor segments have an inductive reactance associated therewith" is a recitation of inherency in of the prior art elements and Applicant's claimed subject matter. When the structure recited in the reference is substantially identical to that of the claims, claimed properties or functions are presumed to be inherent (*In re Best*, 562 F.2d 1252, 1255, 195 USPQ 430, 433 (CCPA 1977); MPEP 2112.01). Further, Applicant's claim requirement of "wherein the inductive reactance and capacitive reactance of the antenna segment are equal at the predetermined frequency" is a claim requirement of intended use in the pending apparatus claims. Further, it has been held that claim language that simply specifies an intended use or field



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of use for the invention generally will not limit the scope of a claim (Walter , 618 F.2d at 769, 205 USPQ at 409; MPEP 2106). Additionally, in apparatus claims, intended use must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim (In re Casey, 152 USPQ 235 (CCPA 1967); In re Otto , 136 USPQ 458, 459 (CCPA 1963); MPEP2111.02).

- iv. The ion shower of claim 13, wherein the plurality of conductor segments (3; Figur 1, 2, 4; Abstract) and plurality of capacitors form a resonant circuit (8,2,9; Figur 1; Abstract) at the predetermined frequency, as claimed by claim 17. Applicant's claim requirement of "form a resonant circuit at the predetermined frequency" is a claim requirement of intended use in the pending apparatus claims. Further, it has been held that claim language that simply specifies an intended use or field of use for the invention generally will not limit the scope of a claim (Walter , 618 F.2d at 769, 205 USPQ at 409; MPEP 2106). Additionally, in apparatus claims, intended use must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim (In re Casey, 152 USPQ 235 (CCPA 1967); In re Otto , 136 USPQ 458, 459 (CCPA 1963); MPEP2111.02).
- v. The ion shower (Figur 1, Abstract) of claim 21, further comprising a workpiece support structure associated with the top portion of the chamber (7; Figur 1, Abstract), and operable to secure the workpiece having an implantation surface orientated facing

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downward toward the extraction assembly (5; Figur 1; Abstract) for implantation thereof, as claimed by claim 22

Moslehi teaches a plasma processing apparatus including a plurality of capacitors (356,358,360,362,364; Figure 9; column 15,16) and conductor segments (356,358,360,362,364; Figure 9; column 15,16), wherein the conductor segments ("antenna zones"; throughout) are serially connected through the plurality of capacitors (356,358,360,362,364; Figure 9; column 15,16). Moslehi further teaches a wafer support (Figure 11; not numbered).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to add Moslehi's serially located capacitors between Weiler's plurality of conductor segments (3; Figur 1, 2, 4; Abstract) and to add Moslehi's wafer support (Figure 11; not numbered).

Motivation to add Moslehi's serially located capacitors between Weiler's plurality of conductor segments (3; Figur 1, 2, 4; Abstract) and to add Moslehi's wafer support (Figure 11; not numbered) is for reducing induced RF voltages as taught by Moslehi (column 2; lines 20-30), and for supporting a desired article, respectively.

### ***Conclusion***

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Rudy Zervigon whose telephone number is (571) 272-1442. The examiner can normally be reached on a Monday through Thursday schedule from 8am through 7pm. The official fax phone number for the 1763 art unit is (571) 273-8300. Any Inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Chemical and Materials Engineering art unit receptionist at (571) 272-1700. If the examiner

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can not be reached please contact the examiner's supervisor, Parviz Hassanzadeh, at (571) 272-1435.

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